Mumps

Mumps is a Class B Disease and must be reported to the state within one business day.

Mumps is caused by a paramyxovirus. Symptoms include fever, headache, muscle aches, tiredness, and loss of appetite, followed by swelling of salivary glands. Transmission occurs through droplets of saliva or mucus of an infected person. Humans gain immunity from mumps through previous mumps infection or vaccination.

Before a vaccination program was implemented in the U.S., mumps was a common illness in infants, children, and young adults. The first mumps vaccine was licensed in 1967, and by 2005, high vaccination coverage resulted in a 99% reduction in mumps rates in the United States. According to the Centers for Disease Control and Prevention (CDC), two doses of the vaccine is estimated to be 88% effective at protected an individual from infection.

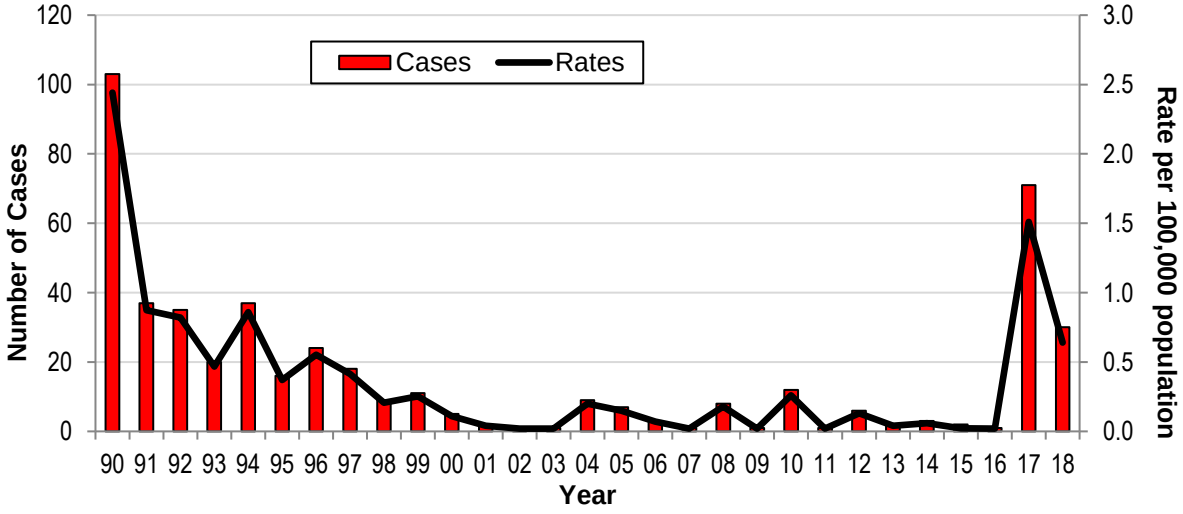
However, there has been an increase in the number of reported cases of mumps since 2006. Most of these cases have been associated with outbreaks. A majority of these outbreaks occur in places where individuals are living in close proximity to one another, such as at college campuses. Outbreaks can occur in populations with high rates of vaccination, indicating that mumps transmission can be sustained among the few persons not protected by vaccination. Attack rates are higher among those who receive only one dose of vaccine.

According to the CDC, outbreaks were reported in 48 states and the District of Columbia in 2017, with over 5,000 cases reported. This was the first year that a major mumps outbreak was seen in Louisiana in recent years.

Incidence

The incidence of mumps in Louisiana has declined dramatically with the increase of vaccination coverage (Figure 1).

Figure 1: Case numbers and rates of mumps – Louisiana, 1990-2018

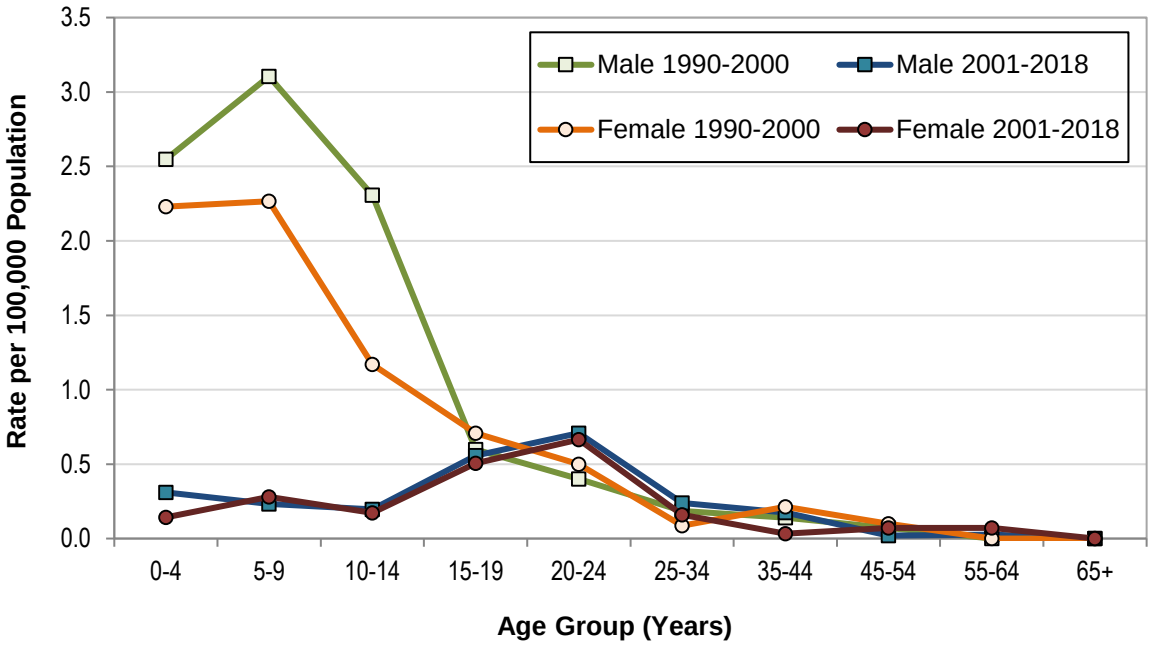


Of the 71 cases reported in Louisiana in 2017, 58 were linked to an outbreak associated with a university. The additional 13 were likely recognized and reported due to enhanced surveillance as healthcare providers were more likely to suspect mumps during the outbreak.

Sex and Age

The age group distribution shows that mumps is a disease occurring primarily in younger people. Even after the sharp decrease in incidence following widespread use of the vaccine, incidence rates remain slightly higher among the younger age groups. While the rates were highest in individuals younger than 20 years-old prior to 2000, the most affected age group has shifted to college-age young adults. Incidence rates have significantly decreased among males and females between the periods of 1990 to 2000, and 2001 to 2018 (Pearson's chi-square, $p<0.00$). There are no significant differences in incidence between the sexes (Figure 2).

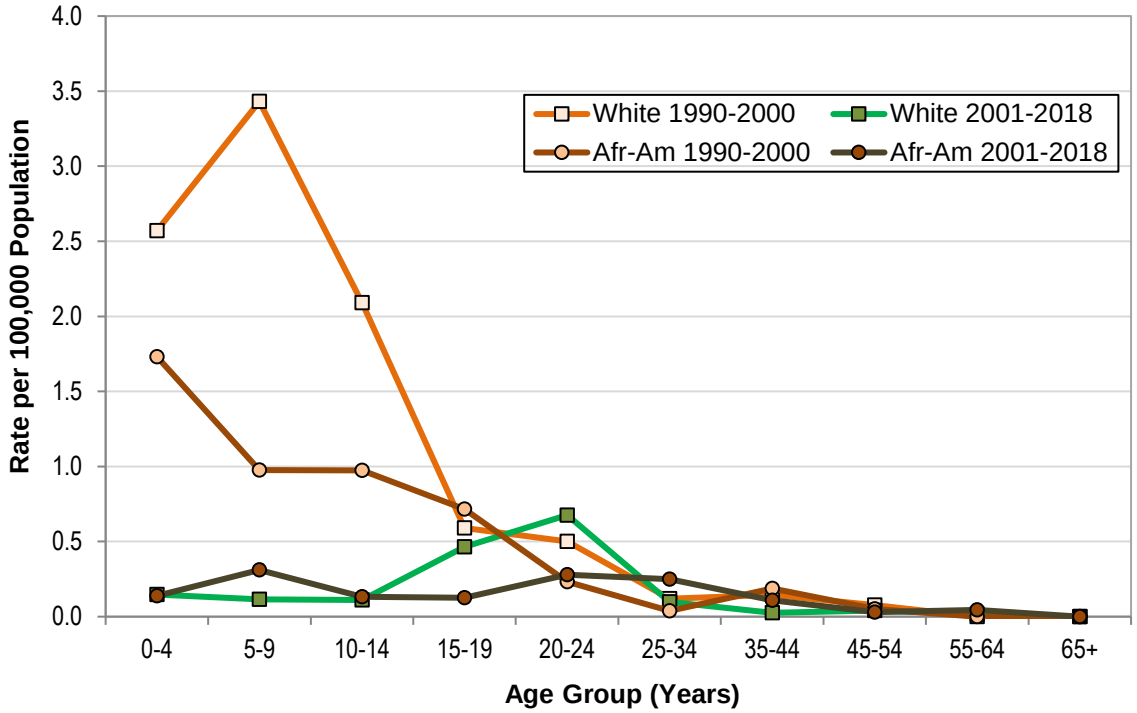
Figure 2: Mumps incidence rates by sex and age - Louisiana, 1990-2000 and 2001-2018



Race

The distribution of mumps cases by race shows a higher overall incidence rate of mumps among Whites for the period from 1990 to 2000 (Pearson's chi-square, $p<0.00$); however, there is no difference in incidence between races for the period from 2001 to 2018. Both Whites and African-Americans show decreases in incidence between the periods from 1990 to 2000 and 2001 to 2018 (Pearson's chi-square, $p<0.00$) (Figure 3).

Figure 3: Mumps incidence rates by race and age group - Louisiana, 1990-2000 and 2001-2018



2017 Mumps Outbreak

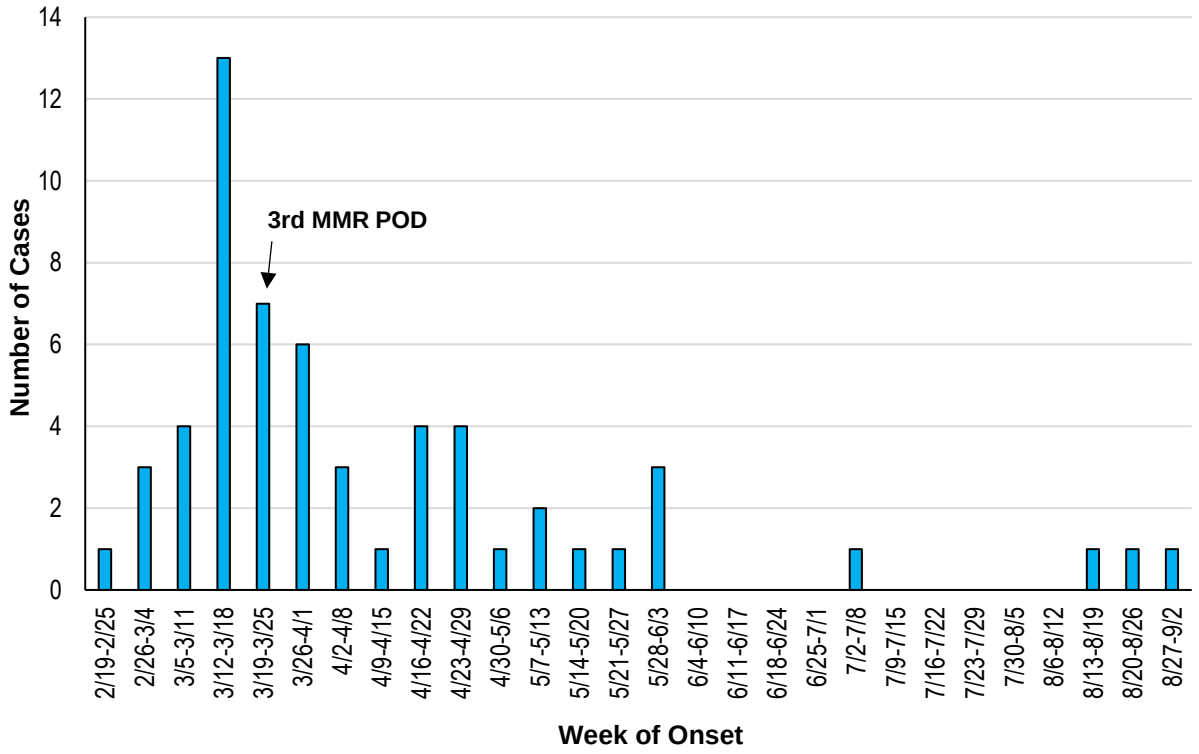
In March of 2017, the Louisiana Department of Health's (LDH) Infectious Disease Epidemiology Section (IDEpi) was notified of three to five suspected mumps cases associated with a university. IDEpi and the LDH Immunization Program worked with the university health center to collect buccal swabs from any students presenting with parotid swelling so that testing could be performed at the Office of Public Health (OPH) Laboratory. Once positive results were identified, the university sent out a statement letter to all students, faculty, and staff alerting them to the outbreak. The community was advised to check their vaccination status and go to the health center should they develop parotid swelling. The university and the Immunization Program ordered additional doses of the measles-mumps-rubella (MMR) vaccine and made these available for two days at a vaccine Point of Dispensing (POD). All individuals were encouraged to get up to date on their MMR vaccines and close contacts were advised to receive a third dose of the vaccine.

As the outbreak continued, IDEpi processed requests for testing and completed patient information forms for each suspected case. IDEpi attempted to contact and interview each confirmed or probable case in order to identify potential at-risk groups, common exposure sources, and close contacts. Cases were advised to isolate themselves for five days following onset of swelling. Close contacts were informed of the range of symptoms associated with

mumps, advised to monitor for symptoms for up to twenty-five days, and advised to receive a third dose of the MMR vaccine.

A total of 58 cases were identified over the course of the outbreak, 49 of which were university students. The first recorded onset was in February, and the last reported onset was in September of 2017 (Figure 4).

Figure 4: Number of Cases by Date of Swelling Onset



The outbreak was considered complete once 50 days had elapsed since a case was identified, which is the timeframe of two complete incubation periods. All cases reported parotid swelling; 81% reported jaw pain; 51% reported fever; and 25% reported muscle aches. Eight patients developed complications such as testicular swelling, swelling of the ovaries, and hearing loss. One patient developed both encephalitis and pancreatitis.